a density level determining circuit which determines multi-level density levels in a plurality of sub-pixels in the target pixel, where the target pixel is divided into the sub-pixels, in accordance with the density level of the target pixel and the edge direction of the target pixel discriminated by the edge judgment circuit.

15. A method for processing processes multi-level image data on density levels of pixels, where a pixel is divided into a plurality of sub-pixels, comprising the steps of:

discriminating an edge direction of a target pixel from differences in density level between the target pixel and adjacent pixels thereof based upon the multi-level image data; and

determining multi-level density levels in a plurality of sub-pixels in the target pixel in accordance with the density level of the target pixel and the discriminated edge direction of the target pixel.

18. The method according to claim 15 further comprising the step of performing smoothing on image data of the pixel, on which an edge is discriminated, by using an asymmetric filter having the target pixel at a center thereof, wherein in said determining step density level of each of the sub-pixels in the target pixel is determined based on the density level of the smoothed image data of the target pixel and on the discriminated edge direction of the target pixel.

Please add the following new claims 19 and 20:

19. An image processor which processes multi-level image data on density levels of pixels, comprising:

an edge judgement circuit which discriminates an edge direction of a target pixel from differences in density level between the target pixel and adjacent pixels thereof based upon the multi-level image data; and

a density level determining circuit which determines density levels in a plurality of sub-pixels in the target pixel, where the target pixel is divided into the sub-pixels, in accordance with the density level of the target pixel and the edge direction of the target pixel discriminated by the edge judgment circuit;

wherein the density level determining circuit comprises:

a density controller circuit which sets density-level setting parameters for each of the sub-pixels in the target pixel in accordance with the edge direction of the target pixel discriminated by said edge judgment circuit; and

a density-level setter circuit which sets the density level of each of the plurality of sub-pixels in the target pixel based upon the density level of the target pixel by using the parameters set by said density controller circuit.

20. An image processor which processes multi-level image data on density levels of pixels, comprising:

an edge judgement circuit which discriminates an edge direction of a target pixel from differences in density level between the target pixel and adjacent pixels thereof based upon the multi-level image data; and

a density level determining circuit which determines density levels in a plurality of sub-pixels in the target pixel, where the target pixel is divided into the sub-pixels, in accordance with the density level of the target pixel and the edge direction of the target pixel discriminated by the edge judgment circuit;

wherein said edge judgment circuit cancels the discriminated edge direction when the density level of a pixel adjacent to the target pixel in the edge direction is larger than a threshold value.--